APPENDIX 1

ROV operations and data collection checklists and logs, A. – J.

A. Equipment Checklist

Equipment Checklist

Name: _____ Date: _____ Project: _____

- ☐ *ROV (ready for use with all sensor and camera components installed)*
- ☐ *Umbilical (both new and pink).*
- ☐ *Floats for umbilical (purchase new)*
- ☐ *J-Box*
- ☐ *ROV power transformer*
- ☐ *ROV Navigational/Recording box (2 DSR-45s, nav. computer, horita)*
- ☐ *ROV Control box (ROV control, OSD, sonar, and Track II)*
- ☐ *ROV Monitor box (both forward and downward monitors)*
- ☐ *Extra DSRs (20 and 45)*
- ☐ *TC Wedge and X-Keys (two of each)*
- ☐ *Flat-plate TVs (Samsung and Sharp)*
- ☐ *Flat-plate monitors (two large, two small)*
- ☐ *DVD recording decks*
- ☐ *Story board lap-top and VGA converter*
- ☐ *GPS with antenna*
- ☐ *Hydrophone Head with stainless mount and bolts*
- ☐ *Hydrophone pole, mounting bracket, and cable*
- ☐ *Transponder and extra pingers*
- ☐ *Clump weights*
- ☐ ***Hypack Hardlock Key***
- ☐ *Box of misc. wires*
- ☐ *Tool box*
- ☐ *Spare parts for ROV (shaft seals and rods, Lasers, dummy plugs, ect.)*
- ☐ *Large format digital tapes (at least 60)*
- ☐ *Pre-made tape labels (0-25 F&D + 10 blanks)*

- ☐ *Checklists (30 each)*
- ☐ *Data Managers Notebook*
- ☐ *Site Plan maps*
- ☐ *Box of manuals*
- ☐ *Miscellaneous office supplies (paper, pens, pencils, folders, ect…)*
- ☐ *Brothers Labeler and extra tape*
- ☐ *PC supplies (CD-Rs, Floppies, cables, ect…)*
- ☐ *Field supplies (Duct tape, cable ties, rope, ect…)*
- ☐ *Color printer and extra ink cartridges*
- ☐ *Navigational computer back-up power supply*
- ☐ *Bulk coax cable and cat5 cable*
- ☐ *All chargers (transponder, radios, drill, ect…)*
- ☐ *Compass*
- ☐ *Electronics tool briefcase*
- ☐ *Scuba gear (two sets for emergency recovery)*
- ☐ *Navigator and Data Manager computer desks*
- ☐ *Folding chairs*
- ☐ *Spare altimeter (Dirk)*
- ☐ *Spare OSD E-proms*
- ☐ *Saw horses*

B. ROV Pilot Checklist

ROV Pilot Checklist

Name: _____ Date: _____ Dive #: _____

Pre-Dive:

2) ROV

- ☐ ***Check prior ROV Pilot Checklist for comments.***
- ☐ ***Check that main power is off at console.***
- ☐ *Check thruster shaft seal integrity (look for collapsing seal or other abnormality) 3/8 gap and spacer has 1/8 of play.*
- ☐ *Lifting hardware secured to ROV and free of defect.*
- ☐ ***Confirm Vent Plugs are secure (hull/camera).***
- ☐ *Make sure all end caps are seated properly. Dummy connectors in place.*
- ☐ *Check for loose cabling, connectors and bulkhead connectors.*
- ☐ *Calibrate all lasers and change batteries.*
- ☐ *Clear camera ports (Ensure dust/smudge free).*
- ☐ *Check umbilical for damage and ensure floats and clump-weight connectors are secured.*

3) Controls

- ☐ ***Trim, Auto Depth/Heading, Thruster enable, and Lights: OFF***
- ☐ *Turn main power on.*
- ☐ *Check all thruster functions (joysticks and trim).*
- ☐ ***Thruster enable: OFF***
- ☐ *Check light functions.*
- ☐ ***Lights: OFF***
- ☐ *Check laser functions.*
- ☐ ***Lasers: OFF***
- ☐ *Check all cameras (tilt and zoom).*
- ☐ *Confirm OSD reads correct depth, heading, and time.*
- ☐ *Check tracking transponder function.*

Post-Dive:

1) ROV:

- ☐ *Check light functions:* ***Turn OFF***
- ☐ ***Power down main console.***

- ☐ *Check thrusters for fouling.*
- ☐ *Check thruster seals for signs of collapse or excessive wear.*
- ☐ *Check entire ROV for signs of damage.*
- ☐ *Check Umbilical for signs of damage or wear.*
- ☐ *Check that vent plugs are secure.*
- ☐ *Check that shrouds are secure.*
- ☐ *Install shorting plug in top of tracking transponder.*
- ☐ *Complete ROV Pilot's Log.*

Comments:

C. ROV Pilot’s Log

ROV Pilot's Log

Pilot's Name:

Date: **Dive Number:**

Location:

Pilot must provide a short post-dive narrative of all operational events:

Time (TC)	Depth (m)	Notes

Comments:

D. ROV Navigational Checklist

ROV Navigational Checklist

Name: _____ Date: _____ Dive: _____

Pre-Dive:

1) **ROV Planned Track Display**
   - ☐ *Planned track file opened and displayed on Navigational Computer and Helm monitor.*
   - ☐ *ROV and Ship symbols displayed.*
2) **Video Recording**
   - ☐ *Forward and Down camera DSR-45s loaded with tapes.*
   - ☐ *Computer Video screen PowerPoint opened, with correct storyboard, site maps, and line numbers.*
   - ☐ ***Storyboard recorded on both forward and down camera tapes and DVD hard drives.***
   - ☐ ***Laser calibration board recorded on both forward and down camera tapes and DVD hard drives.***
3) **Hypack Data Recording**
   - ☐ *Hypack survey file opened and ship set as main vessel.*
   - ☐ *Shared Memory and OSD raw files correctly opened, with dive and file names entered.*
4) **ROV Navigational Log**
   - ☐ *Log file opened and Pre-flight information entered into database.*
   - ☐ *Paper copy of navigational map labeled with date and dive number.*
   - ☐ *Paper copy of log file filled out with pre-flight information.*

Start-Dive:

1) **Video Recording**
   - ☐ ***Forward Camera DSR-45 in recording mode.***
   - ☐ ***Down Camera DSR-45 in recording mode.***
   - ☐ ***Forward DVD in recording mode***
   - ☐ ***Down DVD in recording mode***
2) **Hypack Data Recording**
   - ☐ ***"Start logging" in Hypack and set ROV as main vessel.***
   - ☐ ***"Start" recording of shared memory.***
   - ☐ ***"Capture" OSD raw.***
   - ☐ ***Video screens captured at each line start and end.***

End-Dive:

1) **Communication**
    - ☐ *Inform deck officer dive is ending..."Prepare to surface ROV".*
2) **Video Recording**
    - ☐ *Stop forward camera tape recording.*
    - ☐ *Stop down camera tape recording.*
3) **Hypack and Text File Data Recording**
    - ☐ *Stop logging in Hypack survey.*
    - ☐ *End logging in shared memory.*
    - ☐ *Stop capture of OSD raw.*

Post-Dive:

1) **Video Recording**
    - ☐ *Check tape labeling to verify correct Survey Name, Date, Dive Number, and Tape Number.*
2) **Hypack Data Recording**
    - ☐ *Verify that newly created files exist (Hypack, Shared Memory, and OSD raw).*
3) **Navigational Log**
    - ☐ *Complete paper copy of log file.*
    - ☐ *Verify navigational map is complete with date and dive number.*
    - ☐ *Enter all post-dive information into database.*

Comments:

E. Deck Officer's Checklist

Deck Officer's Checklist

Name: _____ Date: _____ Dive #: _____

Pre-Dive:

- ☐ *Assign deployment and retrieval responsibilities and brief all involved.*
- ☐ *Check lifting hardware on ROV for defect.*
- ☐ *Inspect umbilical hard-point to winch cable (8-10 meters from weight) for defects.*
- ☐ *Confirm clump weight hardware is secure.*
- ☐ *Discuss with helm deployment and retrieval sequence (ships position and heading).*
- ☐ *Perform a VHF radio test (Pilot/Navigator and Helm).*
- ☐ *Fill out header information on Deck Officer's Log.*

On Station:

1) **Hydrophone**

- ☐ *Deploy hydrophone once on station.*
- ☐ *Confirm hinge point is secure and lines are tightly tied off.*
- ☐ ***Inform helm Hydrophone is down.***

4) ROV

- ☐ *Have helm position ship for ROV deployment.*
- ☐ *Confirm from Pilot and Navigator ROV is ready for launch.*
- ☐ *Confirm that all involved in deployment are prepared (in position, with hardhats and lifejackets on).*
- ☐ *Inform crew, "ROV is ready for deployment".*

During Dive:

- ☐ *Secure deck, (close all gates and tie down any loose equipment).*
- ☐ *Confirm hydrophone is secure and no signs of significant movement observed.*
- ☐ ***If ROV left in water between dives**, establish who will be piloting ROV, tending umbilical, maintaining clump weight, and in radio communication with helm.*

Retrieval:

- ☐ *Have helm position ship for clump weight and ROV retrieval.*
- ☐ *Confirm from Pilot and Navigator ROV is ready for retrieval.*
- ☐ *Confirm that all involved in retrieval are prepared (in position, with hardhats and lifejackets on).*

- ☐ *Inform crew, "ROV is ready for retrieval".*

Leave Station:

- ☐ *Secure ROV and Make sure Pilot has powered down thrusters, lasers, and lights.*
- ☐ *Secure clump weight.*
- ☐ *Secure winch.*
- ☐ ***Raise Hydrophone and tie off.***
- ☐ *Secure deck, (close all gates and tie down any loose equipment).*
- ☐ *Inform ROV crew, "Ready to transit".*
- ☐ *Inform helm hydrophone is raised and deck secure.*
- ☐ *Complete Deck Officer's Log.*

Comments:

F. Deck Officer's Log

Deck Officer's Log

Deck Officer's Name:

Date: **Dive Number:**

Location:

Time (TC)	Depth (m)	Notes

Time (TC)	Depth (m)	Notes

Comments:

G. ROV Data Recording Checklist

ROV Data Recording Checklist

Name: _____ Date: _____ Project: _____

Video Recording:

1) **Forward Camera**
   - ☐ *ROV video recorded with no apparent loss of image quality.*
   - ☐ *TC window recorded and clearly readable.*
   - ☐ *ROV data sensor displays recorded and readable (Compass Heading, Date, Temperature, Camera Tilt, Range, and Depth).*
   - ☐ *TC audio track recorded and tested for data extraction using the Horita TCW-50.*
   - ☐ *DVD hard drive recording with TC audio track.*
2) **Down Camera**
   - ☐ *ROV video recorded with no apparent loss of image quality.*
   - ☐ *TC window recorded and clearly readable.*
   - ☐ *TC audio track recorded and tested for data extraction using the Horita TCW-50.*
   - ☐ *DVD hard drive recording with TC audio track.*

Hypack Data Recording:

1) **GPS Fix (Ships Position)**
   - ☐ *Test for good GPS feed with correct X and Y coordinates*
   - ☐ *Confirm correct compass heading*
   - ☐ *TC and Date recorded with GPS data*
2) **ROV Positional Fix from TrackPoint II**
   - ☐ *Test for "good" TrackPoint feed*
   - ☐ *Test logging of X and Y coordinates*
   - ☐ *Range and Bearing*
   - ☐ *TC*
3) **ROV Data Sensors (all TC linked) from OSD into Hypack**
   - ☐ *Depth*
   - ☐ *Compass Heading*
   - ☐ *Temperature*
   - ☐ *Distancing Sonar*

- ☐ *Camera Tilt*

Comments:

Add to Checklist:

H. ROV Data Manager Checklist

ROV Data Manager Checklist

Data Manager's Name: _____ Date: _____ Dive #: _____

5) **Navigator's Name: _____**

- ☐ *Paper ROV Dive Log collected.*
- ☐ *Navigational Maps collected.*
- ☐ *Navigator's Post-Dive comments recorded into Data Managers Log.*

6) **Pilot's Name: _____**

- ☐ *Paper Pilot Log collected.*
- ☐ *Pilot's Post-Dive comments recorded into Data Managers Log.*

7) **Deck Officer's Name: _____**

- ☐ *Deck Officer's Log collected.*
- ☐ *Deck Officer's Post-Dive comments recorded into Data Managers Log.*

8) **Data Manager's Name:_____**

- ☐ *Data Managers Log completed and site maps labeled with Date, Dive, and BTC/ETC.*
- ☐ *All collected logs and maps filed into Data Managers binder.*
- ☐ *Verify all Dates, Dive Numbers, and TC are correct on collected Logs and Maps.*

Comments:

I. Data Manager's Log

Data Manager's Log

Name:

Date: **Dive Number:** **Site:**

Location:

Line Start and End TCs

Line:	BTC:	ETC:	Comment:

Major Pulls and Stops

Type:	BTC:	ETC:	Comment:

Unique Biological Observations

Dive Number:

TC:	Observation:	(ETC):

Operational Events

Dive Number:

TC:

J. Biologist Log

Biologist Log

Dive #: _____ Vessel: _____ Operator: _____

Date: _____ Location: _____ Station: _____

Start Time (UTC): _____ End Time (UTC): _____

Start Time (LT): _____ End Time (LT): _____

Biologists: _____ Observers: _____

Pilot: _____ Navigator: _____

Depth Range (meters): _____ Legs: _____

_____

Forward / Down camera paired red lasers distance apart (cm):_____/_____

X-Key Pad - Check box if observed (and note minimum and maximum depth in meters)

FISH: ☐ **Copper Rockfish (_____),** ☐ **Lingcod (_____),** ☐ **Ocean Whitefish (_____),**

☐ **Sheephead (_____),** ☐ **U.I. Rockfish (_____),** ☐ **U.I. Fish (_____),** ☐ **Vermillion Rockfish**

INVERTEBRATES: ☐ **Red Gorgonian (_____),** ☐ **Cancer sp. (_____),**

☐ **Spider Crab (_____),** ☐ **Lobster (_____)**

Other species observed: _____

_____

_____

Notes and Comments:_____

_____

_____

_____

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_____